Interesting Image

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Extremely Rare Primary Gastric Alveolar Rhabdomyosarcoma in an Adult: ^{18}F-FDG PET/CT Findings

Erişkinde Son Derece Nadir Primer Gastrik Alveolar Rabdomyosarkom: ^{18}F-FDG PET/BT Bulguları

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Abstract

Approximately 85-90% of all rhabdomyosarcoma (RMS) cases occur in children and adolescents. In adults, RMS accounts for only 2-5% of all soft tissue sarcomas. The annual incidence in adults is 0.3-0.5 per 1,000,000 and is classified as a "very rare tumor." More than 95% of RMSs are extragastric. Primary gastric RMS is reported extremely rarely in adults, and the estimated incidence is <0.01/1,000,000/year. This rate is <0.01% of all gastric malignancies and <1% of all adult RMSs. We report the ^{18}F-fluorodeoxyglucose positron emission tomography/computed tomography findings in an adult with primary gastric alveolar RMS, highlighting the metabolic characteristics of this extraordinarily rare malignancy.

Keywords: Rhabdomyosarcoma, alveolar rhabdomyosarcoma, ^{18}F-FDG PET/CT, primary gastric rhabdomyosarcoma, rare malignancy

Öz

Rabdomyosarkom (RMS) olgularının yaklaşık %85-90'ı çocukluk ve adölesan dönemde görülür. Erişkinlerde ise RMS, tüm yumuşak doku sarkomlarının yalnızca %2-5'ini oluşturur. Erişkinlerde yıllık insidansı milyonda 0,3-0,5 olup "çok nadir tümör" olarak sınıflandırılır. RMS olgularının %95'ten fazlası ekstragastriktir. Primer gastrik RMS erişkinlerde son derece nadir olup tahmini insidansı <0,01/1.000.000/yıl'dır. Bu oran tüm gastrik maligniteler arasında %0,01'den, tüm erişkin RMS'ler arasında ise %1'den azdır. Bu yazıda, primer gastrik alveolar RMS tanısı alan bir erişkin hastanın ^{18}F-fluorodeoksiglukoz pozitron emisyon tomografi/bilgisayarlı tomografi bulguları sunularak bu son derece nadir malignitenin metabolik özellikleri vurgulanmaktadır.

Anahtar Kelimeler: Rabdomyosarkom, alveolar rabdomyosarkom, ^{18}F-FDG PET/BT, primer gastrik rabdomyosarkom, nadir malignite

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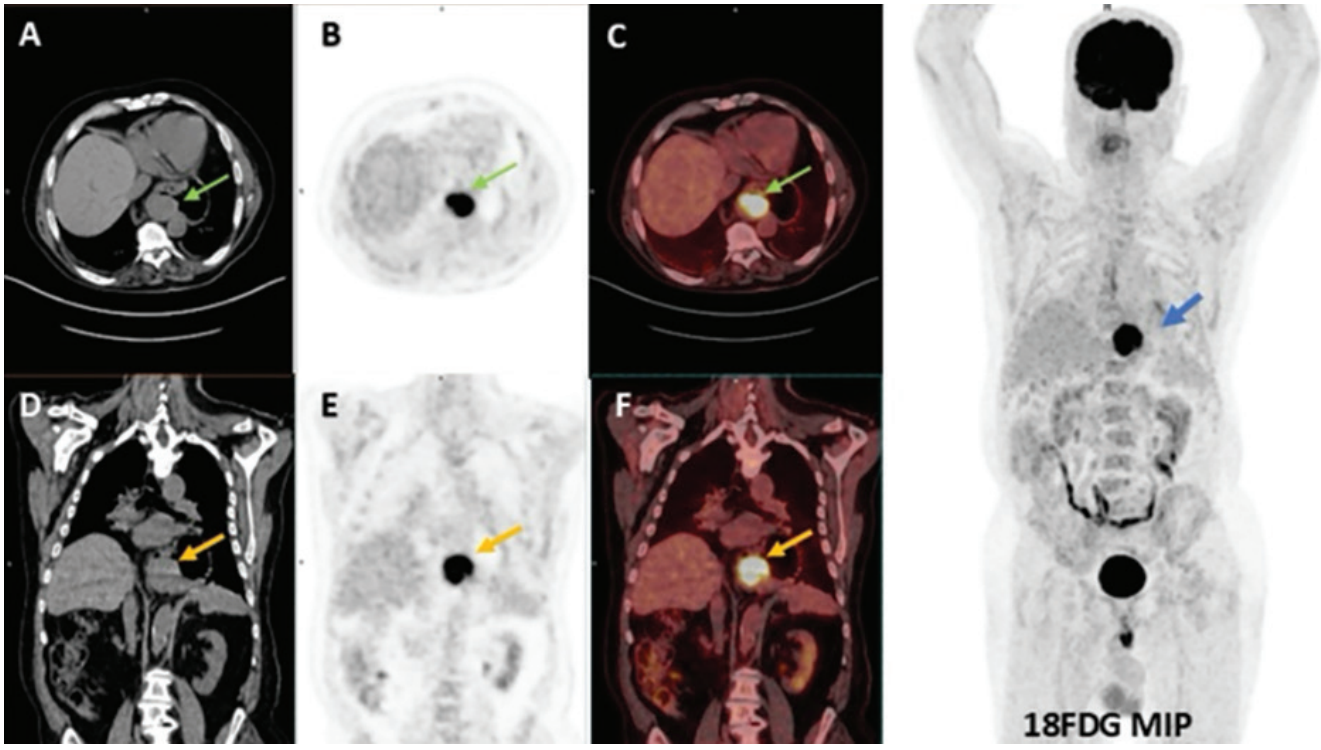

Figure 1. An 85-year-old male was evaluated for anemia. Endoscopic examination revealed a malignant-looking vegetative mass located distal to the Z line. ^{18}F-fluorodeoxyglucose positron emission tomography/computed tomography (^{18}FDG PET/CT) was performed for metabolic characterization and staging. Transaxial CT (A), PET (B), and PET/CT (C) images (green arrows); corresponding coronal CT (D), PET (E), and combined PET/CT (F) images (yellow arrows); and the maximum intensity projection (MIP) projection (blue arrow) show the lesion. It showed irregular wall thickening in the gastric cardia, reaching up to 16 mm at its thickest point, and intense ^{18}F-FDG uptake [maximum standard uptake values (SUV_{max}): 19.90]. Histopathology confirmed the diagnosis of alveolar-type rhabdomyosarcoma (RMS). Primary gastric RMS is extremely rare in adults. Although RMS is the most common soft tissue sarcoma in children, it is rare in adults and rarely affects the gastrointestinal system (1). We highlight the metabolic features of this rare malignancy by reporting the ^{18}F-FDG FDG PET/CT findings in an adult patient with primary gastric alveolar RMS. Although RMS is the most common soft tissue sarcoma in childhood, it is quite rare in adults, and gastrointestinal involvement is rare at all ages; primary gastric RMS—especially the alveolar subtype—is extremely rare, with very few documented cases (1,2,3,4,5). Gastric RMS is highly aggressive and may present with anemia, abdominal pain, or gastrointestinal bleeding, and in many cases, lymph node or lung metastases are present at the time of diagnosis (6). Treatment outcomes differ significantly between pediatric and adult RMS: multimodal treatment provides cure rates of over 70% in localized pediatric disease, while the situation is significantly worse in adults, with 5-year overall survival ranging from approximately 20% to 43% (7,8). ^{18}F-FDG PET/CT (is an important imaging tool in RMS and demonstrates high metabolic activity, consistent with the significantly elevated SUV_{max} in this case. Gastric adenocarcinoma, which accounts for approximately 90% of gastric malignancies, also typically shows ^{18}FDG-avitation and should be prioritized in differential diagnosis when extensive gastric involvement is observed (2). This case highlights an extremely rare presentation of primary gastric alveolar RMS in an adult and emphasizes the role of ^{18}F-FDG PET/CT in metabolic characterization, staging, and clinical decision-making in unusual gastric malignancies. Primary gastric RMS should also be considered in the differential diagnosis of ^{18}F-FDG-avid gastric lesions.
Written informed consent was obtained from the patient for the ^{18}F-FDG PET/CT examination.

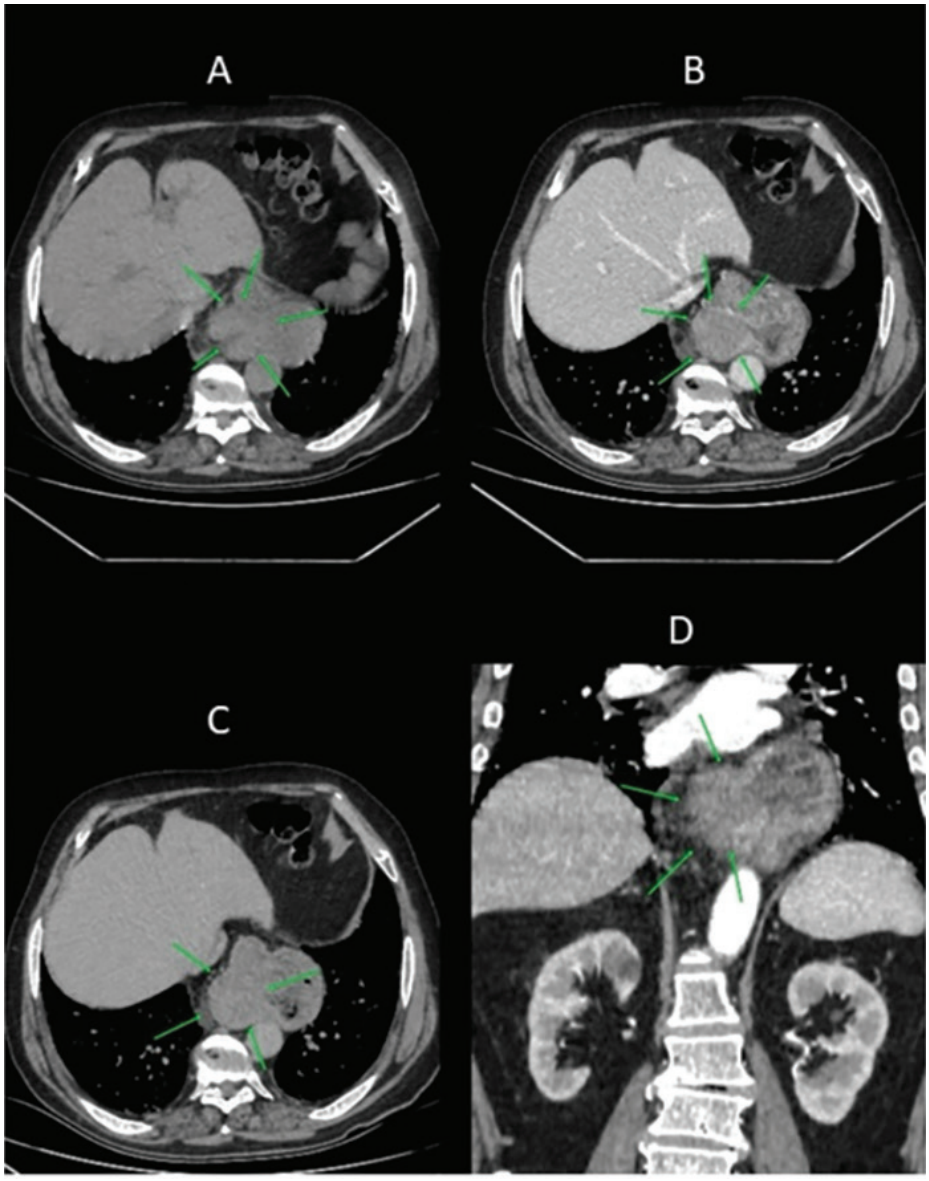

Figure 2. Dynamic contrast-enhanced upper abdominal computed tomography demonstrates a 28 × 41 mm hypovascular mass (green arrows) located in the portion of the stomach herniated into the thoracic cavity in a patient with a sliding hiatal hernia, on images obtained in the axial anterior contrast (A), portal venous (B), and delayed (C) phases, and on coronal reconstructed images (D).

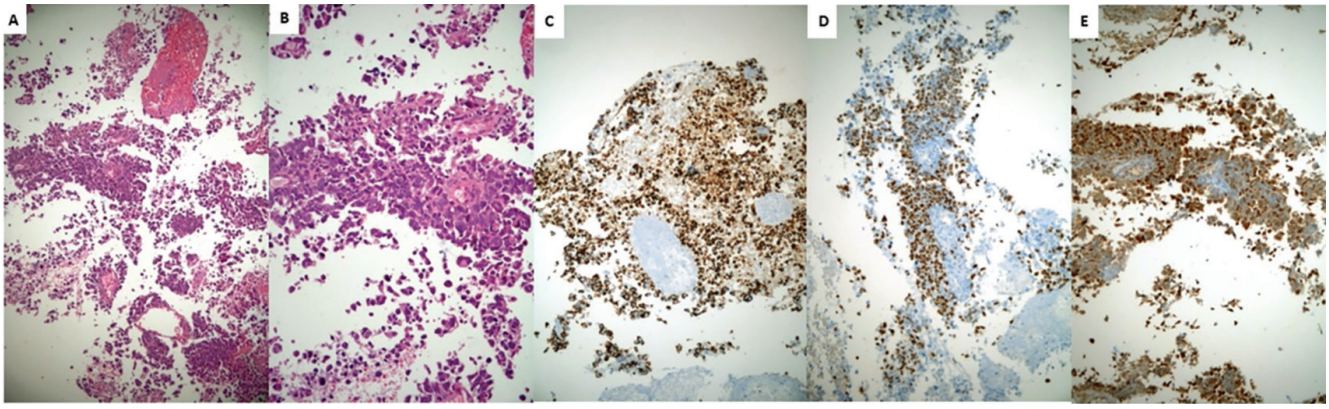

Figure 3. (A) Hematoxylin-eosin (H&E, ×200) staining shows widespread layers of small, round tumor cells with sparse cytoplasm on a necrobiotic background. (B) H&E ×400 shows monomorphic tumor cells with hyperchromatic, angular nuclei, indistinct nucleoli, and evenly distributed chromatin. (C) Cytoplasmic desmin positivity in tumor cells immunohistochemistry (IHC ×200). (D) Strong nuclear MyoD1 positivity in tumor cells (IHC ×400). (E) Nuclear myogenin positivity in tumor cells (IHC ×400).

Ethics

Informed Consent: Written informed consent was obtained from the patient for the ^{18}F-FDG PET/CT examination.

Footnotes

Authorship Contributions

Surgical and Medical Practices: B.Y.B., İ.B., C.L., İ.T.R., E.A., G.A., E.A., Consept: B.Y.B., İ.B., C.L., İ.T.R., E.A., G.A., E.A., Design: B.Y.B., İ.B., C.L., İ.T.R., E.A., G.A., E.A., Data Collection or Processing: B.Y.B., İ.B., C.L., İ.T.R., E.A., G.A., E.A., Analysis or Interpretation: B.Y.B., İ.B., C.L., İ.T.R., E.A., G.A., E.A., Literature Search: B.Y.B., İ.B., C.L., İ.T.R., E.A., G.A., E.A., Writing: B.Y.B., İ.B., C.L., İ.T.R., E.A., G.A., E.A.

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References

1. Lairani DJ, Lemfadli DA, Pr Ait Errami PS, Pr Oubaha PK. Primary gastric rhabdomyosarcoma. A case report. Glob Acad J Med Sci. 2020;2:1-3.
2. Hernández E, Tejedor-Tejada J, Sánchez Sanmamed L, Camblor C, Villar Caamaño A, Robles Gaitero S, Groba E. Primary gastric rhabdomyosarcoma. A rare cause of an upper gastrointestinal bleeding. Rev Esp Enferm Dig. 2025;117:476-477.
3. Nakamura N, Suzuki R, Takahashi Y, Uwamori A, Masuda M, Fukui T, Noda Y, Tsuta K, Naganuma M. Primary gastric rrhabdomyosarcoma. Intern Med. 2023;62:3483-3488.
4. Francis J, Young P. Got the GIST? Maybe not! Primary gastric rhabdomyosarcoma (RMS): 2542. Am J Gastroenterol. 2017;112:S1386.
5. Fox KR, Moussa SM, Mitre RJ, Zidar BL, Raves JJ. Clinical and pathologic features of primary gastric rhabdomyosarcoma. Cancer. 1990;66:772-778.
6. Palermo M, Mastronardi LM, García RH, Solari I, Tarsitano FJ. Primary gastric rhabdomyosarcoma. Case report. Acta Gastroenterol Latinoam. 2012;42:131-134.
7. Crist WM, Anderson JR, Meza JL, Fryer C, Raney RB, Ruymann FB, Breneman J, Qualman SJ, Wiener E, Wharam M, Lobe T, Webber B, Maurer HM, Donaldson SS. Intergroup rhabdomyosarcoma study-IV: results for patients with nonmetastatic disease. J Clin Oncol. 2001;19:3091-3102.
8. Bompas E, Campion L, Italiano A, Le Cesne A, Chevreau C, Isambert N, Toulmonde M, Mir O, Ray-Coquard I, Piperno-Neumann S, Saada-Bouzid E, Rios M, Kurtz JE, Delcambre C, Dubray-Longeras P, Duffaud F, Karanian M, Le Loarer F, Soulié P, Penel N, Blay JY. Outcome of 449 adult patients with rhabdomyosarcoma: an observational ambispective nationwide study. Cancer Med. 2018;7:4023-4035.